

ture” to “culture” but as an organic assemblage of apparatuses of selection and signification: the biosemiotic.

Biosemiotics has been much in the philosophical and anthropological literature lately, from Giorgio Agamben’s (2002) retrieval of biologist Jakob von Uexküll’s early twentieth-century notion of the *Umwelt* (a being’s sensorial world), to Eduardo Kohn’s 2007 use of *Umwelten* to speak of human-dog relations for the Amazonian Runa, to Jussi Parikka’s *Insect Media* (2010), to Thierry Bardini’s *Junkware* (2011). What those works have in common is concern with the unstable mix of commensurability and incommensurability—the multiplicity—that characterizes human/nonhuman agencies, sensoria, and relations. Insofar as Kockelman employs the notion of the “multiverse,” his theory is in dialogue with this work. By and large, though, Kockelman takes a different tack, seeking a unifying material semiotics of relationality. His multiverse is epistemological, and not ontological.

At the center of Kockelman’s analysis is “relations between relations”—and there are, he writes, many species of these, some structural (Saussure, Marx), some processual (Pierce), and some that fuse these forms (Veblen). In such fusions, relations between relations produce values that generate derivative values that come to stand for the “original” relations, which are then sieved into future relations. That notion of derivation recalls Jane Guyer’s arguments in *Marginal Gains* (2004) about the production of value in Atlantic African exchange; relations and value are always already derivative (see also Lépinay 2011). To put this in the language of evolutionary biology, adaptations always mix with what Stephen Jay Gould and Richard Lewontin (1979) called “exaptations,” ancillary developments of affordances not strictly selected for. All these are connections consistent, I think, with Kockelman’s project.

But, one might also make connections that crinkle the neatness of Kockelman’s model. If Kockelman argues that the key unit in anthropology might be “a relation between two kinds of relations between relations,” he does not do so in dialogue with a major contemporary anthropological thinker on relation: Marilyn Strathern. Her work *The Relation: Issues in Complexity and Scale* (1995) offers critical takes on “relation” as well as “complexity” and “scale,” which, she argues, are reifications with social histories (see also Tsing 2000 on “scale”). Kockelman’s claim that his theory of meaning “foregrounds the environment-organism relation at any level of complexity and with respect to any kind of life form” can be complicated by treating “relation” as a thickly historical term of art.

Each term in the claim might benefit from other worrying, too. As for the environment-organism relation, in *The Mirage of a Space between Nature and Nurture* (2010), Evelyn Fox Keller suggests that attempts to overcome the organism-environment divide often simply reify those poles. As for any level of complexity, beyond historicizing “complexity” itself, one might ask what sort of complexity is at issue; physicist Seth Lloyd (2001) catalogued dozens of measures of complexity. With respect to any kind of life form, do we know

what “life” is or why it takes a “form”? This conjuncture of life and form—which has origins in the German *Lebensform*—is more historical than ontological (Helmreich and Roosth 2010).

In *Trying Leviathan* (Burnett 2007), the historian of science D. Graham Burnett looks at philosopher of biology John Dupré’s (1999) argument that a whale might be considered a fish if one takes seriously ordinary folk taxonomy (of the kind championed by Melville in *Moby-Dick*’s “Cetology” chapter; Melville 2001 [1851]). But Burnett argues that the excommunication of whales from fishes is not a philosophical matter but a historical one. What is called for is not generalization but specification—or, otherwise put, “situated knowledge” (Haraway 1991; feminist critiques of universalism would be intriguing to think with next to Kockelman’s model).

The “diagrammatic generality” sought by Kockelman may be just that, a generality that attaches to the world only if one takes “environment organism,” “level of complexity,” and “life form” as categories that can be extracted from their historical emergence. The model, offered to bring different practitioners into conversation, is, as Kockelman rightly says, an ideal type. But it is also an ideal type that can be examined as a social fact emergent from relations between the relation between history and epistemology, relations we might think through—to join Kockelman in paging back to our disciplinary forebears—using the analytical sieve of Boasian historical particularism.

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### The Specificity of Human Communication Eludes Semiotic Theories

Paul Kockelman’s ambitious paper connects social and cultural anthropology with evolutionary theory on the basis of two assumptions: first, humans are evolved organisms; second, culture itself evolves. These two assumptions have been the starting point of much work in anthropology, connecting the natural sciences with the study of human culture. One reason why mainstream anthropologists (especially when influenced by the interpretive tradition) tend not to be interested in such approaches is the widespread impression that naturalistic accounts of culture do not deal with the meaning of public symbols or put excessive restrictions on talk of meaning and symbols.

There have been, however, many interesting proposals to naturalize the study of signs and their meaning. Kockelman’s

could be described as drawing on two theoretical traditions: the semiotic study of natural signs (Peirce 1868) and the selectionist account of signals proposed by Ruth Millikan (1984), among others. We feel the pull of both approaches, but we fundamentally disagree with the way they account for human communication.

Kockelman borrows from semioticians the intuition that some signals can represent features of the world merely by virtue of standing in some relation with it and with an observer. Thus, the visual shape of a bear signals the presence of that bear to observers. No intentionality is required on behalf of the bear. Indeed, a stone may “signal” its presence in the same way.

Such natural signs, Kockelman argues, may come to serve communicative functions through a process of selection. Like Millikan, he argues that linguistic devices (words, syntactic forms, inflections, etc.) become stable in a community because of the regular patterns of correspondence between the use of the linguistic device and the responses of hearers. In particular, when linguistic devices are words, these regular patterns constitute the words’ conventional meanings. Both human and nonhuman signals are subject to various processes of selection: most nonhuman animal signals were selected as part of the organisms’ biological evolution, while most human signals were selected during cultural history. But both are selective processes through which items with meaning emerge. Consider, for instance, the calls of vervet monkeys: these calls, one type for each one of their major predators, may have been selected because they serve to warn other monkeys.

In this way, one can get meaning from causal relations combined with selection. In Kockelman’s view, these two basic mechanisms (occasional refinements notwithstanding) suffice to give us a complete account of human communication: “Human-specific cognitive processes and linguistic practices are just particularly complex modes of significance and selection.”

We disagree. Human signals have at least one property that other animal communication systems lack. Human signals cannot be explained by significance and selection alone. Focusing on these processes is enlightening when trying to understand nonhuman communication (from vervet call to bee dance) but will lead us no further.

According to Gricean theories of communication (Csibra and Gergely 2009; Grice 1989c; Sperber and Wilson 1995 [1986]; Tomasello 2008), human communication relies on the interpretation of communicative intentions in a way that no other communication system does. When one is decoding vervet alarm calls, one does not need to pay any attention to the communicative intentions of monkeys. We can learn all we need to know about the meaning of vervet calls by observing their causes and their history. Knowing that a caller intends to be heard does not tell us anything we did not know about the meaning of his calls. His intentions do not figure.

Compare with human pointing. If A points at some region in space, it would, most of the time, be very hard for B to

figure out what object or process A wishes to draw B’s attention to without making assumptions about A’s intentions, beliefs, and beliefs about B’s beliefs. A’s intentions are not just necessary to the production of her pointing gesture. They are crucial for its interpretation, too: B can make sense of the signal only by being aware of A’s communicative intention. In other words, understanding communicated information is not for humans just a process of decoding strings of signifiers; it is an inferential process that starts with attributing communicative intentions to the communicator and ends with a conclusion about what the communicator meant or wanted to communicate. Human communication is based on the expression and recognition of communicative intentions. This (and not necessarily some greater “complexity”) might be the main root of the flexibility and richness of human communication.

Paul Kockelman dismisses Gricean theories for being overly preoccupied with psychology and not concerned enough with the public aspects of communication. However, the empirical study of overt interactions is an important aspect of the Gricean tradition (Brown and Levinson 1987; Sperber and Neveck 2004); this approach is quite compatible with the strong interest many anthropologists take in the history of public systems of signs.

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We are all wary of reinventions of the wheel, but Kockelman reminds us that sometimes reinventing builds better machines. He extends recent evolutionary thinking along several lines.

*Semiosis.* Kockelman contributes to a resurgence of Peircean semiotics (an earlier instance, to which I will return, is Deacon 1997) involving three shifts of emphasis: the turn from the structure of signs to the process of signification, highlighting the *interpretant*; the focus on *indexicality* rather than symbolism, highlighting contiguity, context, causality, and relation; and the analysis of nested *hierarchies* of semiotic processes (understated in Kockelman’s essay, but see his discussion of fig. 9). Kockelman first exploits these shifts with figure 4: Peirce’s emphasis on the interpretant entails the agent sensing a sign; insofar as agents not only sense but also react, then, selection—interpretant as instigation—is implicit in signification. The triangle of figure 4 is already, covertly, the diamond of figure 6.

*Coevolution.* Kockelman’s central relation of relations, selection to signification, embraces a vast range of organization in part because the dizzying transposability of its terms (agents are objects, objects agents; signs are interpretants, interpretants signs, etc.) models the corelations constitutive of the